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Fisheries of Tunisia, 1976

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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FISHERIES OF TUNISIA, 1976

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ABSTRACT

In 1976, an estimated 15,000 Tunisian fishermen using 5,692 fishing vessels (392 commercial vessels) caught 39,312 metric tons (t) of fish and sea life. Coastal fisheries (14,430 t) replaced the usually prolific lampara (light or lamp) fisheries which only caught 13,746 t.

The total catch amounted to only 13 percent of Tunisia's estimated maximum sustainable yield (MSY) of 290,000 t, according to recent surveys. European pilchards and round sardinella were about 75 percent of this resource.

In 1976, Tunisia began fishing for tuna using two Spanish-built seiners. Shrimp landings could also be increased with the discovery of new grounds.

Mahdia, Sfax, Sousse, Kelibia, La Goulette (Tunis), and Bizerte are Tunisia's most important fishing ports. Most of the catch is consumed fresh; only a fraction is canned or reduced into fish meal. Improvements in the nation's cold stores and cold chain are needed and offer possible areas for U.S. exports. Tunisian exports and imports of fish are both small and controlled.

Figure 1.--Map of the Republic of Tunisia.

I. INTRODUCTION

The Republic of Tunisia is situated in North Africa, between Algeria and Libya. Tunisia lies along the Mediterranean Sea, slightly southeast of Sardinia and to the west of Sicily. The total area of the nation is 164,149 km^2, which makes it about the size of Georgia. Tunis, the capital, is located in northern Tunisia.

Tunisia is divided into three geographical zones: a fertile northern area which is famous for its lush agricultural products; a central coastal plain noted for livestock grazing and olive groves; and an arid, hot southern zone which supports seminomadic people and small herds of goats and camels.

According to the Department of State's Background Notes: Tunisia, the following facts and figures highlight modern Tunisia: Population, 6 million; Annual growth rate, 2.3 percent; Gross domestic product (GDP), $4.4 billion; Real GDP growth, 7.5 percent; Per capita income, $750; Agricultural production, wheat, olives, citrus fruits, grapes, and truck crops; Industrial products, crude oil, phosphates, olive oil, textiles, construction; Natural resources, oil, phosphates, iron ore, lead, zinc, and fish.

Tunisia's written history dates back to the 12th Century B.C. when Phoenician traders established trading posts in Tunisia. The most famous of these cities, Carthage (located about 30 minutes north of Tunis) was destroyed by the Romans when they occupied Tunisia. Vandals, Arabs, and Turks later invaded the country. In 1881, the French established a protectorate in Tunisia which remained until March 20, 1956, when Tunisia became independent.

Under the leadership of President Habib Bourguiba, Tunisia has developed into a modern nation noted for its moderating influence in North Africa. Tunisia, under its present leadership, has developed warm ties with both East and West. In developing the national economy, the Tunisian Government has taken an active part while allowing private enterprise to flourish.

In sum, in the past 20 years, Tunisia has become a busy, modern nation and a stabilizing influence throughout North Africa.[1/]

1/ Department of State, Background Notes: Tunisia, Office of Media Services, Bureau of Public Affairs, U.S. Government Printing Office, Washington, D.C., November 1976.

Another excellent publication, prepared by a U.S. bank, is Investment Guide: Tunisia, Citicorp Overseas Services Inc., 2nd Floor, 49, Avenue Habib Bourguiba, Tunis, Tunisia.

II. FISHING GROUNDS[2/]

A. Coastline

Tunisia has a 1,030-km coastline, according to the FAO Fishery Country Profile. In the north, the coast is generally rocky with many small, sandy beaches, coves, and inlets; farther south, the coastline is generally smoother with wide sandy beaches.

B. Continental shelf

FAO reports Tunisia's shelf area (out to 200 m) to be 77,300 km^2--a fairly large area in comparison with other Mediterranean countries. In northern Tunisia, the shelf is narrow and drops off to 200 m fairly quickly. In the south, however, depths average about 10 m for a considerable distance offshore. (See appendix C and D.)

C. Sea bed

The surface of the ocean floor off northern Tunisia is mainly sand and mud with both coral and rock formations. As one moves farther south, the ocean floor becomes smoother and sandier with fewer coral formations.

D. Currents

The meeting of the eastward moving Gibraltar Current and the eastward flowing Mediterranean Current affects the waters in northern Tunisia. An offshoot of these two currents flows south into the Gulf of Tunis. Farther south, in the Gulf of Gabes, countercurrents are found flowing in a clockwise direction.

E. Water temperatures

Surface water temperatures off Tunisia range from highs of 23°C in the summer to lows of about 14°C in the winter.

F. Salinity

The salinity of Tunisia's coastal waters averages between 37.5 to 39 parts per thousand, which is common for most of the Mediterranean Sea.

G. Planktology

Plankton displacement can reach highs of 900 mg per m^3 of water, a rate that is higher than that found in most Mediterranean waters. This high plankton content in Tunisia's waters helps attract schools of breeding and feeding fish.

2/ Aubray, R., W. Brandhorst, and M. Ben Alaya, The Fishery of Tunisia, Rome, April, 1975. Unpublished report. FAO, "Tunisia," Fishery Country Profile, Rome, July 1976.

III. FISHERY RESOURCES

A. Fish

Studies mady by the Tunisian Institut National Scientifique et Technique d'Oceanographie et de Peche, partly in conjunction with FAO marine scientists, in 1972 and 1974, indicated that the pelagic biomass in Tunisian waters may total 580,000 t, distributed as follows:

European pilchard.....	270,000 t	(46 %)
Round sardinella.....	170,000 t	(29 %)
Atlantic mackerel.....	70,000 t	(13 %)
Atlantic horse mackerel..	60,000 t	(10 %)
European anchovy.....	10,000 t	(2 %)
Total.....	580,000 t	(100 %)

If these estimates are correct, then Tunisia's MSY of pelagic species is 290,000 t--about six times greater than present catch levels. (See appendix A.)

Other fish species caught by Tunisian fishermen include the following species, listed in a very rough order of importance:

Striped mullet.....	Mullus barbatus
Red mullet.....	Mullus surmulatus
European hake.....	Merluccius merluccius
Common pandora.....	Pagellus erythrinus
Scorpionfish.....	Scorpaena notala
Smoothhound.....	Mustelus mustelus
Piper gurnard.....	Trigla lyra
Grey mullet.....	Mugil cephalus
Grey mullet.....	Mugil capito
European sea bream....	Dicentrarchus labrax
Gilthead sea bream....	Chrysaphrys aurata
Bluefin tuna.....	Thunnus thynnus
Atlantic little tuna..	Euthynnus alleteratus
European eels.....	Anguilla anguilla

Appendix A provides additional data on Tunisia's fish resources from 1970 to 1974.

B. Crustaceans

About 90 percent of the Tunisian catch of crustaceans consists of triple-grooved shrimp (Penaeus kerathurus). Deep-water pink shrimp (Parapenaeus longirostrus) catches account for 2 percent of the total crustacean catch. Red shrimp (Aristeus antennatus)and giant red shrimp (Aristeomorpha foliacea) contribute fractionally to the total crustacean catch.

Common spiny lobster (Palinurus vulgaris) landings account for about 7 percent of the total crustacean catch. Norway lobsters (Nephrops norvegicus--called "langoustine") provide small quantities to the total catch.

Appendix A provides additional details on Tunisia's crustacean harvest for 1970 to 1974.

C. Mollusks

Common octopus, cuttlefish, and squids are caught in Tunisian waters in reasonably sizable quantities. Mediterranean mussels (Mytilus galloprovincialis) are also harvested in some quantity.

D. Other

Two species of common sponges (Euspongia officinalis and Hippospongia equina) are gathered by Tunisian fishermen.

Photo 1.--A recent Tunisian stamp honoring the nation's sponge fishermen.

The main question facing Tunisian fishery officials in late 1977 was the question of how to proceed in tapping the unexploited fish stocks off the Tunisian coast. Although the evidence suggests ample stocks for development, the officials responsible for Tunisia's fisheries are taking a very cautious approach, for the simple reason that they are fully aware of the dangers of possibly overfishing their resource. Thus, at the present time, the Tunisian policy toward fisheries development appears to be one of cautious expansion.

This cautious approach can be seen in Tunisia's catch goals for 1981 that envision an annual increase in catches of only 12 percent per year, until, by 1981, the total catch will be 90,000 t, still well below the potential MSY of 290,000 t.

IV. TYPES OF FISHERIES AND CATCHES

A. General

The three most important Tunisian fisheries are the "lampara" (or light) fisheries (35 percent of the 1976 fisheries catch), the coastal fisheries (38 percent), and the trawl fishery (21 percent). Other fisheries include the lagoon (2 percent), tuna (1 percent), crustacean (3 percent), coral and mollusk (1 percent).

Table 1 on the next page provides data on the Tunisian fisheries catch, by fishery, for the years 1959 to 1976.

Table 1.--Tunisia. Annual fisheries catch, by fishery, 1959-76

Year	Fishery									Total catch
	Trawl	Coastal	Lampara	Lagoon	Tuna	Crustacean	Sponge	Coral	Mollusk	
	Metric tons									
1959	2,703	4,153	6,308	1,187	327	120	119	-	-	14,926
1960	2,646	6,938	6,269	1,038	-	219	62	-	-	17,175
1961	3,062	8,739	8,481	1,128	-	226	86	-	-	22,723
1962	3,301	8,295	5,259	1,293	516	221	119	-	-	19,004
1963	4,038	7,536	6,862	959	419	251	130	-	-	20,194
1964	3,913	7,425	6,618	1,021	668	327	73	1	-	20,045
1965	4,684	7,758	5,059	913	648	468	102	-	-	19,632
1966	5,863	8,122	9,641	1,206	580	353	66	1	-	25,834
1967	7,504	11,938	11,189	1,063	824	404	98	1	-	33,021
1968	7,128	8,514	9,869	904	898	539	84	1	-	27,937
1969	7,663	10,659	9,242	987	628	417	73	1	-	29,671
1970	6,393	7,566	7,935	826	687	558	46	1	363	24,376
1971	6,370	8,768	9,130	938	925	548	56	2	304	27,040
1972	6,943	9,360	9,830	892	698	807	62	8	290	28,889
1973	8,139	12,651	13,064	1,483	557	751	63	7	201	36,717
1974*	7,507	10,679	11,647	1,166	755	1,170	43	8	262	32,237
1975**	7,771	11,829	15,566	720	731	1,140	35	5	431	38,228
1976***	8,147	14,430	13,746	964	564	1,033	76	6	346	39,312

1/ Totals may not agree because of rounding.
2/ Tunisian fishery statistics allow for a 10- to 20-percent difference between reported (as shown above) and actual catch. This difference is explained by the Tunisians as local consumption by fishermen and direct transactions that are not reported. Totals, thus, are below actual catches.
3/ Figures shown for the inshore and trawl fisheries are also understated because part of the catch made by these two fisheries is reported under crustaceans and tuna fisheries.
Sources: (1959-61) Section des Statistiques et des Etudes Economiques, Direction des Services des Peches, Statistiques des Produits de la Peche, 1968, Secretariat d'Etat a l'Agriculture Republique Tunisienne, 1969, p. 1-4. (1962-72) Defense National-Documentation, Perspective de La Peche, No. 2., October 1973, p.7. (1973-76) Direction des Peches, unpublished reports.
* Include 9,763 t of unreported fish consummed by fishermen; ** Include 6,772 t. *** Includes 9,688 t.
Note: Statistics provided in table 1 do not agree with FAO data provided in appendix A.

B. Lampara

Lampara fishing (using lamps or lights at night to attract fish to the surface) in Tunisia dates back to 1894. The principal species caught by this method of fishing include the round sardinella (generally 40-50 percent of the total lampara catch), the European pilchard (about 25 percent), and the Atlantic mackerel and European anchovy (about 10 percent).

Photo 2.--Lampara boats in Bizerte are towed out to sea at night where they use lamps attached to each boat to attract fish.

The lampara fleet was estimated at 150 vessels from 1974 to 1975. The vessels, averaging 14 m in length, were equipped with a 130-hp engine, and averaged 15 gross registered tons (GRT) in weight. Each of these vessels normally puts out to sea with a crew of 22 men, a 10-m long net carrier, and 2 or 3 row boats that carry the lamps. These vessels normally operate during moonless nights anywhere from 8 to 32 km away from their home port in waters 40 to 80 m deep.

Once at sea, the rowboats light their lamps (either underwater or surface lights) which are powered by 7-to-15 hp diesel engines. When fish begin to surface the main vessel uses a 150-to 250-m long surrounding ring net to capture the fish. The net is then hauled in by the net carrier leaving the main vessel to reset its nets.

Most of the lampara fishing takes place from the ports around Kalibia, Mahdi, Sousse, and Bizerte.

Only two lampara vessels are equipped with power blocks; only 40 vessels are equipped with winches; the rest of the fleet uses manpower to haul their nets aboard.

C. Coastal

In 1976, Tunisia's coastal fleet of 4,000 to 5,000 rowboats and sailboats caught an estimated 15,000 t of fish, or about 36 percent of the total Tunisian fisheries catch.

The coastal, or inshore, fisheries use small (usually under 9 m) wooden vessels which rarely venture farther out than 5 km for longer than a single day. Only an estimated 850 vessels (or 20 percent) of the coastal fleet are powered.

The vessels average about 2 t of fish per year, but some of the larger vessels can catch up to 4 t per year.

Photo 3.--Part of the coastal fleet in Bizerte in northern Tunisia.

The vessels are manned by 12,000 or more fishermen who use handling, trolling, cast netting, gill netting, and trap fishing to catch their fish. Sole, mullets, red mullet, sea breams, groupers, and octopus are the main species taken by the coastal fishermen who land their catches at 30 or more fishing ports or villages.

Most of Tunisia's coastal fishermen are found along the southeastern coast of Tunisia (about 85 percent) and in northern Tunisia (about 15 percent).

D. Trawl

In 1976, an estimated 202 trawlers and trawler-seiners landed 18,147 t of fish and crustaceans, or about 21 percent of the total Tunisian catch.

The trawlers used in this fishery average 22 m in length and weigh 80 GRT; they use a 280-hp engine. About 50 of these vessels convert to purse seiners during the sardine season. The vessels carry a crew of 15 men and generally average about 1 week at sea per trip. The ships operate beyond 5 km --usually between 25 and 50 km offshore--in waters deeper than 50 m. Many, but not all, of these vessels are made of steel (some with wood and steel), and many are imported.

Photo 4.--The Mohamed Ali is part of the trawl fleet based in Tunis; the vessel is owned and operated by the Office National des Peches (ONP).

The main species caught by the trawl fleet include striped mullet and red mullet, which may account for 30 percent of the total catch. Next come European hake, common pandoras, scorpionfish, smooth hound, piper gurnards, cuttlefish, Atlantic horse mackerel, rays, bogues, and shrimp.

According to Tunisian law, these trawlers are prohibited from fishing within 6 nautical miles of the coast. In the Gulf of Gabes, the fleet is not permitted to fish inside the 50-m line. In all areas, the trawlers must use a minimum stretched mesh size of 36 mm.

Tunisian authorities believe that up to 400 Italian trawlers also operate throughout the year on the Tunisian continental shelf, catching an estimated 20,000 t per year. This fishing has led to friction between Italy and Tunisia.

E. Shrimp

An important part of the trawl fleet's catch is shrimp and, to a lesser degree, lobster. In 1976, Tunisia's crustacean catch was 1,033 t, of which about 90 percent consisted of triple-grooved shrimp (Penaeus kerathurus). Concentrations of this shrimp are found in 10 to 40 m of water in the Gulf of Tunis and in the Gulf of Gabes, mainly in the months of June and July. During the rest of the year, this shrimp can be found scattered throughout the shelf at depths of between 50 and 60 m.

Small quantities of Parapenaeus longirostrus are also found in Tunisian waters from 200 to 500 m, particularly west of La Galite, south of the Esquerquis and in the Gulf of Gabes.

There is a limit of 250 hp on vessels fishing for shrimp and a restriction of the number of vessels allowed; about 65 vessels are permitted to fish for shrimp each year. There are also some seasonal and geographical restrictions designed to protect shrimp nurseries in the Gulf of Gabes.

F. Tuna

Bluefin tuna and Atlantic little tuna are both caught in Tunisian waters, between May and July, as the fish swim along the coast during their annual migration. The fish are caught in large net fences called "madragues," some of which extend 5 km offshore.

In 1974, there were two madragues in operation, one at Kuriat and the other at Sidi Daoud; ONP operated both madragues. Each madrague employed about 300 workers, and each caught about 200 t of fish.

The average weight of the fish ranged between 50 and 125 kg for the bluefin and 5 kg for the Atlantic little tuna.

In 1976, Tunisia received two 50-GRT tuna purse-seiners, the Monastir and Sidi Daoud, which had been built for $300,000 apiece. Both vessels are operated by ONP out of Tunis.

Photo 5.--The Monastir and Sidi Daoud are 50-GRT seiners equipped with hydraulic gear; ONP operates both ships.

The Monastir and Sidi Daoud landed about 50 t of bluefin from May to August 1976, averaging fish from 9 to 23 kg.

G. Lagoon

Tunisia's lagoon fisheries are centered along the shores of seven major lagoons:

Name	Area Hectares	1972-74 Catch Metric tons
Ishkeul.....	12,000	120
Bizerte.....	15,000	150
Tunis.....	5,000	500
Kelibia.....	10,000	10
Ghar-el-Mehl.....	4,000	15
Bibans.....	30,000	250
Hergla.....	5,000	-
Total.....	80,000	1,050

These seven lagoons--or "lacs" (lakes) as they are called in Tunisia--average about 1,200 t of fish per year.

The deepest lagoon is at Bizerte which is 10 m deep at its deepest point. The shallowest lagoon is at Hergla which is only 1 m deep. The most productive lagoon is the Tunis lagoon which produces about 100 kg of fish per hectare (ha) versus only 1 kg of fish per ha for the lagoon at Kelibia.

Photo 6.--A view of the Ghar-el-Melh lagoon port.

Grey mullets, bass, sea breams, and eels comprise the bulk of the catch along with some lesser amounts of catfish. Oyster and clams are also grown in the Bizerte lagoon.

One of the most productive lagoons in Tunisia is located next to the city of Tunis. The lagoon is divided into two parts of 3,000 and 2,000 ha by the maritime canal and roadway which links Tunis to La Goulette. The Tunis Lagoon supplies both mullet and eels.

H. Sponge

Two species of common sponges, Euspongia officinalis and Hippospongia equina, form the bulk of Tunisia's sponge fishery. Sponge harvesting takes place from Cape Luza south to the Libyian border. Sponges are harvested either by divers, use of tridents (which accounts for about 65 percent of total landings), or by dredging.

I. Coral

Coral is collected in northern Tunisia near the border with Algeria. Production varies from 1 to 8 t per year.

J. Mollusks

Tunisian fishermen catch fairly large quantities of common squid, cuttlefish, and octopus; most of this catch is reported under lampara, trawl, or coastal fisheries. In addition, Portuguese cupped oysters and Mediterranean mussels are also harvested.

K. Freshwater

Freshwater fisheries play almost no role in Tunisia, except for the tourist trade.

Table 2.--Tunisia. Fishing fleet, by fishery and vessel type, 1970-76

Fishery & vessel type	1970	1971	1972	1973	1974	1975	1976
	Number of vessels						
Artisanal							
Powered.....	744	744	791	804	na	na	na
Unpowered.....	2,865	2,865	2,865	2,865	na	na	na
Total artisanal..	3,609	3,609	3,656	3,669	4,464	5,208	5,300
Commercial							
Trawlers.....	83	93	98	102	na	na	na
Trawler-seiners....	31	31	31	31	na	na	na
Total.....	114	124	129	133	155	175	202
Sponge.....	148	148	148	148	na	na	na
Lampara.....	46	46	52	52	na	na	na
Other*.....	35	35	44	64	na	na	na
Total.....	81**	81**	96**	116**	135**	187**	190**
Total commercial.	353	363	368	397	290	362	392
Total fleet.....	3,962	3,972	4,024	4,066	4,754	5,630	5,692

Sources: Direction des Peches and Office National des Peches, various unpublished reports.

* Includes powered artisanal vessels as well as some lampara vessels; no reason for this combination of vessels has been provided.

** Does not include sponge fishing vessels.

V. FISHING FLEET

A. General

In 1976, there were 5,692 fishing vessels registered in Tunisia. Of these vessels, a total of 5,300 vessels (93 percent of the fleet) belonged to the artisanal fisheries and 392 vessels (7 percent) belonged to the modern or commercial fisheries, as is shown above in table 2.

B. Fleet modernization

In January 1969, a law was passed in Tunisia defining conditions for obtaining funds to purchase new fishing vessels or to modernize existing vessels; the loans were administered by the National Bank for Agriculture. Under the new law, investors in new vessels received:

15 % government subsidies;
10 % financing by owners;
75 % bank loan at 6% interest over 8 to 12 years.

For repairs to fishing vessels, subsidies of $573 to $22,935 were made along with loans of up to 60 percent over 3 years with a 3-percent interest payment.

Between 1970 and 1974, a total of $16 million was loaned out or given out as subsidies, resulting in the construction of 84 new trawlers, 108 new lampara vessels, and 665 coastal vessels.

C. Shipyards

There are 12 shipyards in Tunisia that have the capacity to build 250 vessels per year, mostly in the 8- to 12-m range. ONP owns and operates one of these shipyards; by mid-1975, the ONP shipyard had built 35 fishing vessels -- some in conjunction with a SOCOMA shipyard.

VI. FISHING ORGANIZATIONS

A. Office National des Peches

The Office National des Peches (ONP), established in 1958, has among its many responsibilities, the duty to operate a state fishing fleet. In 1974, ONP operated a total of 61 trawlers (about half the trawler fleet).

Photo 7.--View of some of the ONP trawler fleet at port in Tunis. The Nabeul was bought in Spain.

B. Private fishing companies

The majority of Tunisia's fishing fleet is owned by individuals or by families. Most private fishing vessel owners--or firms--generally own one vessel, but owners of two or three fishing vessels can be found.

VII. FISHERMEN

There are, according to the best estimates, 15,000 fishermen working in Tunisia: 2,000 work in the trawl fisheries, 12,000 work in the coastal fisheries, and 1,000 work in the other fisheries.

According to Tunisian sources, about 80 percent of the coastal fishermen are illiterate, and 75 percent of the captains in the trawler fleets have no formal training or knowledge of navigation. (See chapter XIV for fisheries education.)

It has been estimated by Tunisian authorities that from 1973 to 1974 the average annual wage of a crewmember on a small fishing vessel was $540 for an ordinary sailor and $3,000 for a masterfisherman. On large trawlers, the wages ranged from $1,800 for an ordinary seaman to $5,400 for a masterfisherman.

VIII. FISHING PORTS

There are about 16 fishing ports in Tunisia that are normally considered when dealing with fisheries along with a number of small village ports where artisanal fishing boats tie up.

Tunisia's major ports include: Bizerte, La Goulette (Tunis), Sousse, and Sfax. Secondary ports include: Tabarka, Mahdia, and Gabes. Fishing is also conducted from the ports of: Kelibia, Korbous, Hammamet, Monastir, La Skirra, Zarzis, Ghar-el-Melh, Louza, and Kerkennah.

Table 3 (below) provides catch and fleet data for the trawler fleets operating out of five of Tunisia's most important fishing ports.

According to the data shown in table 3, the most important base of operation for the Tunisian trawler fleet is the port city of Sfax, which in 1971 had about 57 percent of the total trawler catch, and was the base for well over half the trawl fleet in that year.

Mahdia, Sousse, La Goulette, and Bizerte followed in order of their importance to Tunisia's trawler fishery.

In terms of total fisheries, from 1973 to 1974, the most important Tunisian fishing port was Mahdia which accounted for about 55 percent of the total catch followed by Sfax (15-20 percent), Sousse, Kelibia, La Goulette (8-12 percent each), and Bizerte (5 percent).

Table 3.--Tunisia. Trawl fisheries catch and fishing fleet, by port, in metric tons and number of fishing vessels, 1946-71

Year	Bizerte		La Goulette		Sousse		Mandia		Sfax		Total	
	Catch	Fleet	Catch	Fleet	Catch	Fleet	Catch	Fleet	Catch	Fleet	Catch	Fleet
1946	140	2	514	7	604	4	230	4	40	4	1,725	15
1947	116	2	733	8	1,215	8	484	4	51	1	2,599	22
1948	248	3	922	9	1,464	12	523	7	163	3	3,322	31
1949	136	2	934	10	1,432	14	299	8	120	2	2,925	31
1950	-	-	1,069	11	1,230	12	339	4	-	-	2,792	28
1951	122	2	1,087	12	966	15	263	7	416	7	2,853	36
1952	251	3	999	10	1,098	12	292	8	320	8	2,960	38
1953	98	1	988	14	1,053	11	322	8	298	8	2,759	41
1954	113	2	1,144	14	1,030	10	232	9	408	7	2,928	39
1955	126	2	737	10	950	11	208	9	571	8	2,482	36
1956	91	-	520	10	520	5	148	10	755	13	1,970	36
1957	81	2	461	9	352	6	551	13	991	11	2,355	33
1958	48	1	610	9	610	6	-	-	718	10	1,719	25
1959	9	-	-	-	396	8	760	13	786	12	1,822	26
1960	48	1	387	6	387	8	626	-	1,068	13	2,599	25
1961	30	1	311	5	505	9	178	16	985	12	2,613	28
1962	9	1	691	6	429	7	681	-	1,077	12	2,879	22
1963	362	-	94	2	470	9	-	-	1,418	19	4,815	26
1964	294	-	230	3	612	8	761	-	1,746	26	3,836	37
1965	486	-	420	6	869	11	84	3	2,162	22	4,907	40
1966	438	-	-	-	-	-	-	-	2,654	-	5,828	-
1967	577	7	768	13	981	16	1,224	23	3,786	36	7,170	70
1968	854	10	992	16	853	17	1,398	24	3,250	30	7,222	71
1969	1,224	15	947	11	706	13	1,594	24	2,734	32	8,122	71
1970	645	8	767	13	705	15	1,340	23	3,181	35	6,896	68
1971	549	6	676	9	565	18	868	20	3,444	43	6,022	69

Source: L'Institut National Scientifique et Technique d'Oceanographie et de Peche, Bulletin, Vol.2, No. 3., Salammbo, 1972, p.303-330.

IX. FISH PROCESSING

A. Sardines

Ten canneries in Tunisia pack canned sardines. (See appendix section for listing of firms.) Four of these canneries are located in Sousse. The others are located in: Mahdia (2); Sidi Daoud, Cap Bon (1); Hammamet (1); Dubosville (1), and Gabes (1). Two of the nine canneries are operated by ONP and the others are privately owned.

B. Tuna

There are four canneries that list tuna as being one of the products packed. These canneries include the two ONP plants--in Mahdia and in Sidi Daoud--and two other plants located in Sousse and Babes.

C. Shrimp

Two factories listed in the Tunisian guide to manufacturers process shrimp, the GELMAREC in Tunis and Surgeles Taieb Khalfallah and Cie in Sfax. However, ONP also operates a shrimp processing facility in Sfax and reported in conversations that there are two additional firms processing shrimp in Sfax.

D. Other

Several of the firms listed as processing either sardines and/or tuna also process other types of fish such as anchovies and mackerel in season. Almost all of the 10 canneries in Tunisia report that they seasonally pack fruits or vegetables in addition to fish.

ONP also produces fish meal at a plant in Mahdia and processes sponges for export at its plant in Sfax.

Tunisia's total production of canned seafood (1,200 t in 1970) is very low compared to total catches, suggesting that consumption of fresh fish is far more important than consumption of canned seafoods.

In addition to the above-cited processing facilities, Tunisia also has a freezing capacity of 4 t/day and a frozen storage capacity of nearly 600 t as shown in table 4.

Table 4.--Tunisia. Cold storage facilities, by size and location

Location of cold store	Holding capacity
	Metric tons
Tunis	180
Sfax	140
La Calite	88
Mahdia	70
Bibane	20
Medenine	16
Sousse	15
Zabzis	14
Kelibia	13
Bizerte	9
Djerba	6
Adjim	6
Sidi Daoud	2
Tabarka	2
Total	582

Source: Directorate of Fisheries, unpublished reports.

Tunisia also has the capacity to produce an estimated 57 t of ice per day, the productive capacity of at least four ice plants.

X. FISH DISTRIBUTION AND MARKETING

A. Distribution

Fish landed fresh in Tunisia, as in most nations, is generally taken directly into an auction house where it is sold. In some cases, for example with ONP, the fish are taken directly to market.

Photo 8.- The ONP fish hall at La Goulette in Tunis. The facility is not presently being used.

With somewhat limited cold storage space and with only limited utilization of fish stocks for

Photo 9.--ONP refrigerated vans at Bizerte.

canning purposes, most fish must be transported to local marketplaces quickly. In Tunisia, most fish is transported by truck.

B. Marketing

In 1958, when ONP was established, it was granted a monopoly right to market all fish in Tunisia. In subsequent years, ONP developed a network of about 300 retail shops that sold fish. In 1969, however, this monopoly was ended, and many of these shops have been closed, sold, or rented to individual businesspeople.

Since 1969, the price of fish--which was once fixed by government decree--has more than doubled in some cases. The average exvessel price for fish in Tunisia from 1973 to 1974 was as follows:

	$1.00/t	$1.00/kg
Trawl fish	650	0.65
Pelagic fish	170	.17
Coastal fish	650	.65
Lagoon fish	850	.85
Cephalopods	450	.45
Soles and sea breams	2,000	2.00
Shrimp	2,600	2.60
Lobster	9,000	9.00
Bluefin tuna and bonitos	1,100	1.10
Sponges	6,000	6.00

About 25 percent of all fish landed in Tunisia is sold in the capital city of Tunis each year, usually from May to November.

XI. FISHERIES TRADE

A. Exports

According to Tunisian law, only very limited species and/or fishery products may be exported. These include: clams, eels, octopus, sardines (canned), shrimp, and fish meal.

These restrictions are designed to help keep domestic prices low and supplies of fish available for local consumption.

Exports, naturally, are quite low, but have increased from about 800 t in 1960, to 1,400 t in 1970, and to 2,390 t in 1973. ONP handled most of Tunisia's exports in 1973 and was responsible for exporting 1,270 t. In 1973, fresh fish accounted for most of Tunisian exports (1,050 t), followed by shrimp (620 t), and cephalopods (180 t). France and Italy were Tunisia's largest customers in 1973.

It is not likely, from conversations with ONP officials, that Tunisia will make a bid in the next few years to expand its fishery exports.

B. Imports

Information on Tunisia's imports of fish are somewhat scanty. According to FAO's Yearbook of Fishery Statistics-Fishery Commodities for 1975, Tunisia's imports of fishery products since 1971 are as follows:

Year	Quantity	Value
	Metric tons	Dollars
1971	900	584,000
1972	200	218,000
1973	800	718,000
1974	1,300	1,468,000

The FAO report indicates that all of this fish was either fresh, chilled, or frozen fish; presumably this included large shipments of frozen tuna imported for use in local canneries.

XII. FISHERIES ADMINISTRATION

A. Direction de la Peche

The Direction de la Peche was created in 1961 within the Ministry of Agriculture. It is charged with establishing fishery policies, gathering and publishing fishery statistics, training fishermen, issuing fishing permits, and enforcing fishery regulations. The Direction de la Peche is also responsible for the overall direction of fisheries research in Tunisia. (See chapter XIII.)

The Direction de la Peche has recently moved into a new headquarters office in downtown Tunis. The Direction de la Peche also operates a regional office in Mahdia and another in Sfax. It has a staff of 300 employees, including 20 senior officers. It operates on an annual budget of $5 million, of which 75 percent is used for equipment. Training of fishermen is about one-third of its total budget.

The Direction de la Peche is also officially responsible for representing Tunisia at all international fishery conferences.

B. Office National des Peches

The Office National des Peches (ONP) was established as a semigovernmental body to develop the lagoon fisheries, the tuna (madrague) fisheries, and the fishing fleet. ONP is also responsible for marketing fish, establishing cold stores, operating shipyards, and processing fish.

Since its establishment, ONP has been an important force in developing Tunisia's fisheries. Having reached its goals, ONP is now seeking to change its mandates to move into new areas, such as extension work and pilot projects to develop new fisheries.

Photo 10.--Abdelkader Ben Ali, Assistant Director General of ONP (right), and Chemli Mohamed, Chief of the Production Division of the Direction des Peches (left) in front of two ONP tuna fishing vessels.

ONP also recently moved into a new headquarters building across the bay from Tunis in La Goulette, but it still operates its old office in Tunis. ONP also operates four regional offices in Djendouba, Sfax, Gabes, and Medennine, in addition to their plant operations.

In 1974, ONP operated 61 trawlers with a staff of 3,300 men and women--including 800 crewmen; they landed 3,000 t of fish, mollusks, crustaceans, and sponges.

ONP operated a plant that processed sponges, a plant that produced about 500 t of fish meal in 1974, and a cannery in Mahdia and Sidi Daoud. It also operated a shrimp processing plant at Sfax according to conversations with ONP staff members.

To provide their fleet with ice and to store their catches, ONP operated 24 ice plants (57 t/day capacity) and 37 cold stores (about 600 t capacity). ONP owned 3 refrigerated trucks, 44 insulated trucks, and 30 other vehicles.

Finally, ONP operated three shipyards in Bizerte, Sfax, and Sousse, and a repair yard for marine engine and gear in Sfax, which reportedly can build 35 vessels per year (12-m vessels).

XIII. FISHERIES RESEARCH

The Institut National Scientifique et Technique d'Oceanographie et de Peche (INSTOP) is the body responsible fro carrying out all scientific research into Tunisia's fisheries. INSTOP's headquarters is in Salammbo--about 30 minutes to the north of Tunis almost within view of the Roman ruins of Carthage.

The INSTOP facilities operate six laboratories, 10 tanks for breeding fish, a very large library

Photo 11.--The headquarters of INSTOP in Salammbo.

with about 20,000 books from all over the world (one of the best equipped libraries in North Africa), a museum, and two aquariums.

In addition to the headquarters building, the Institute has recently completed work on a new laboratory which is located at La Goulette.

Photo 12.--The new INSTOP laboratories at La Boulette next to the new ONP facilities.

INSTOP operates two 23-m research vessels, the Hannoun and the Dauphin. These vessels were used by INSTOP and FAO/United Nations Development Program scientists to study the resources of Tunisia's waters which showed that the actual biomass was 580,000 t--far greater than originally thought. The vessels have also been used to locate new shrimp grounds as well as to conduct other types of studies.

INSTOP publishes the Bulletin which contains the results of the Institute's work; the Bulletin is one of the best scientific publications in Africa.

In addition to their work in marine biology, the INSTOP staff (5 scientists and 65 workers) is working in the aquaculture field.

XIV. FISHERIES EDUCATION

Tunisia has an ambitious program of fisheries training, one of the best in Africa. Fisheries education is the responsibility of the Direction de la Peche. Training is provided in fishery schools and in fishery vocational training centers. In 1976, the following schools provided fisheries training for 1,006 students:

	Students
A. Fishery schools:	
1. Kelibia	159
2. Bizerte	90
3. Sfax	86
B. Training centers:	
4. Mahdia	122
5. Zarzis	55
6. Monastir	54
7. Gabes	52
8. Tabarka	60
9. Ghar-el-Melh	51
10. La Goulette	62
11. Kelibia	55
12. Louza	27
13. Kerkennah	23
14. Skhira	20
15. National Marine Center	140
	1,006

Training courses run for 1 year in the vocational centers and for 2 years at the fishery schools. Navigation, mathematics, oceanography, fishing techniques, vessel handling, safety at sea, mechanics, engine repairs, net making, and boat building are some of the courses taught in the various schools. The Swedish International Development Agency was particularly helpful to Tunis in helping set up this program.

Advanced training in fisheries is also available from the National Institute of Agronomy of Tunis, which provides a 2-year course on fisheries to students planning to become senior fisheries officers, and at the Applied Fishery Research Institute.

Photo 13.--Fishery training extends to such small villages as Ghar-el-Melh, where 51 students are enrolled in fisheries courses.

XV. INTERNATIONAL RELATIONS

A. Italy

Tunisia's fishery relations with Italy have been strained in recent years; Tunisian officials estimate that up to 400 Italian trawlers operate throughout the year in Tunisian waters where they catch an estimated 20,000 t of fish.

This Italian fishery led to seizures of many Italian vessels and tempers grew hot in both Italy and Tunisia. In early 1977, however, Tunisian and Italian officials signed a fishery agreement which permits Italian trawlers to fish in Tunisian territorial waters for a 3-year period in exchange for Italian loans and a promise to import 20,000 t of Tunisian olive oil.

B. Other

Although Tunisia's relations with its neighbors, Libya and Algeria, have fluctuated, the three countries have maintained fairly good fishery relations. There are few reports of incidents involving fishing vessels of either Libya or Algeria.

There are no other nations that fish in Tunisia's waters and there are no joint venture fishing companies in Tunisia.

XVI. INVESTMENT AND SALES OPPORTUNITIES FOR UNITED STATES FIRMS

There are limited areas where U.S. investors could work with Tunisians in a joint venture. One area, where U.S. technology is sought, is in the development of a ship building program. Another area where U.S. investment might prove feasible would be in harvesting and processing sardines; this, however, would result in direct competition with other Tunisians who are already in the business. Although U.S. firms are known for their skill in fishing for shrimp, this is one area that did not attract much interest in discussions with local officials.

The possibilities for sale of U.S. products and technology in Tunisia are excellent for a few limited fields. Fish processing machinery would find a small but good market, especially shrimp processing machinery. In addition, the Tunisians would welcome manufacturers of cold storage facilities, freezing facilities, etc.

In discussions with Tunisians, it was agreed that U.S. shipyards did not have a good market in Tunisia because of costs and distance. It was noted by one individual that he could travel to Italy 10 times for every one trip to the United States to see how work was progressing on his vessel...and when it was finished it would only take him a few short hours to sail it home.

It is suggested that any sales literature sent to Tunisia be in French, if at all possible, although a surprising number of Tunisians speak English.

XVII. ACKNOWLEDGMENTS

I would like to acknowledge the work done by R. Aubray, W. Brandhorst, and M. Ben Alaya titled The Fishery of Tunisia, written in Rome in April 1975. This typewritten report provided a wealth of information on Tunisia's fisheries, and it was used to provide much of the background of this report.

I would also like to acknowledge the trip report submitted by G. Kenneth Alameda, Assistant Manager, Research Development, Van Camp Sea Food Company to Eugene Grasberg, Vice President of the Agribusiness Council, Inc. of New York. Alameda's report helped fill in a few gaps in this report.

I would like to thank the following officers at the U.S. Embassy in Tunis for all their efforts on my behalf: Edward W. Mulcahy, Ambassador, Harry Montgomery, Economic-Commercial Officer, and Michael F. Gallagher, Commercial Attache.

I would also like to thank the following Tunisian officials for the time and effort they spent making my trip profitable: Ezzeddine Chelbi, Chef de Cabinet du Ministre de l'Agriculture, Ministre de l'Agriculture; Mohamed Trabelsi, Chef de Division, Direction de la Cooperation Internationale, Ministere des Affaires Etrangeres; Chemli Mohamed, Chef de Division de la Production et de la Vulgarisation, Direction des Peches; Abdelkader Ben Ali, Directeur General Adjoint, Office National des Peches; and to the staff of the Fisheries Institute at Salammbo for their publications.

I regret that both the Directors of ONP and the Direction des Peches were out of the country during my visit, but both Ben Ali and Mohamed provided excellent assistance and literature which helped make the trip a success.

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Appendix A.--Tunisian fisheries catch, by species, 1970-74

Species	1970	1971	1972	1973	1974
	Metric tons				
Fish					
European perch	0	0	0	0	85
European eel	100	100	100	800	301
Turbot	0	0	0	0	2
Flatfishes[1/]	300	300	300	300	194
European hake	400	400	200	600	793
John Dory	0	0	0	0	21
Dusky grouper	800	900	600	600	613
Atlantic sea basses	200	200	200	200	236
Corb	0	0	0	0	9
Croakers, drums[1/]	100	100	100	100	127
Common pandora	800	500	1,100	1,200	845
Sargo breams	2,100	2,300	200	2,300	1,914
Common dentex	200	100	100	200	186
Gilthead sea bream	200	300	200	200	225
Common sea bream	100	100	100	100	103
Salema	200	300	400	400	242
Sea breams[1/]	200	500	100	0	330
Picarels	200	100	200	200	333
Surmullets	1,600	1,800	1,600	1,300	1,633
Percoids[1/]	0	0	0	0	40
Scorpionfishes	100	100	100	100	92
East Atlantic gurnards	0	100	100	0	50
Demersal percomorphs[1/]	0	0	0	100	317
Garfish	100	100	100	100	122
Barracudas	0	0	0	0	66
Mullets	1,300	1,400	1,400	800	1,452
Bluefish	100	200	0	100	161
Jack and horse mackerels[1/]	1,400	1,300	1,100	1,000	758
Leerfish	0	100	100	100	84
Common dolphinfish	0	100	0	0	12
Round and shortbody sardinellas	2,500	3,500	3,400	2,900	7,632
European pilchard	2,800	4,000	5,300	5,500	4,727
European anchovy	100	100	200	200	224
Atlantic bonito	400	500	200	200	499
Northern bluefin tuna	300	500	400	200	265
Swordfish	0	0	0	0	5
Atlantic mackerel	900	700	600	1,100	3,574
Skates and rays[1/]	0	0	0	100	285
Various sharks	700	1,100	800	800	752
Marine fishes[1/]	3,600	2,500	5,100	7,800	10,284
Crustaceans					
European spiny lobsters	100	100	0	0	21
European lobster	0	100	0	0	1
Common shrimp	500	1,000	800	800	1,134
Marine crustaceans[1/]	0	0	0	0	1
Mollusks					
Portuguese cupped oyster	0	0	0	0	28
Mediterranean mussel	300	100	300	300	64
Common cuttlefish	600	600	400	0	857
Common squids	100	0	100	0	104
Common octopus	1,000	1,000	2,000	900	624
Marine mollusks[1/]	0	200	0	100	173
Other					
Corals	0	0	0	0	8
Mediterranean sponges	0	100	100	100	43
Total catch	24,400	27,500	28,100	31,800	42,651

Note: FAO fishery statistics do not necessarily agree with Tunisian fishery statistics.
Sources: FAO, Yearbook of Fishery Statistics, 1974 (Vol. 38).
1/ Not specified.

Appendix B.-- Useful addresses

TUNISIAN GOVERNMENT:

Direction des Peches
32, Rue Alain Savary
Tunis

Office National des Peches
1, Route de la Goulette
Tunis
(or)
Avenue Habib Bourguiba prolongee
Tunis

L'Institut National Scientifique et Technique d'Oceanographie et de Peche
Salammbo

FISH PROCESSORS:

A. Canneries:

Office National des Peches Usine de Conserves de Mahdia
1, Route de la Goulette
Tunis (S-A-T) 1/

Office National des Peches Usine de Conserves de Sidi Daoud
1, Route de la Goulette
Tunis (S-A-T)

Societe Africaine des Produits Conserves (SAPROCO)
Route de Monastir et Avenue Mohamed Ali
Sousse (F)

Societe Anonyme des Conserveries Tunisiennes (SACOT)
12, rue des Glacieres
Tunis (F)

Societe de Conserves Alimentaires de Gabes (SOCONAG)
Avenue Hedi Chaker
Gabes (T)

Societe Industrielle de Peches et de Conserves Alimentaires
Avenue Habib Bourguiba
Megrine-Riadh
Sousse (S-T)

Societe Nord Africaine des Conserves Alimentaires du Sahel
72, rue Ibn Khaldoun
Tunis (F)

Societe Tunisienne de Conserve du Golfe d'Hammamet (SOTUGOLF)
Hammamet (S)

SOCOME
Route de Sfax
Mahdia (F)

FISH PROCESSORS--continued:

A. Canneries-continued

SAPEC
Route de Monastir
Sousse (F)

B. Frozen fish, crustaceans, and mollusks:

GELMAREC
Route de la Marsa Km. 11
Tunis

Surgeles Taieb Khalfallah & Cie
Rue Abulkacem Chebli
Sfax

C. Fishmeal:

Office National des Peches Usine de Farine de Poissons
1, Route de la Goulette
Tunis

D. Sponges:

Office National des Peches, Atelier de Preparation d'Eponges
1, Route de la Goulette
Tunis

COLD STORES AND/OR ICE:

Cooperative Sfaxienne Ouvriere de Production
50, rue Patrice Lumumba
Sfax

Le Frigo
Route de Madagascar
Sfax

Societe Frigorifique et Brasserie de Tunis
5, route de l'Hopital militaire
Bab Saadoun
Tunis

Societe Frigorique et Brasserie de Tunis
Rue Ahmed Boukhari
Sfax

SHIPYARDS:

Chantier Mohamed Sallem
Route de Madagascar
Sfax

Chantier Naval Hedi Dridi
Blvd. Mohamed V.
Sousse

Entreprise de Construction Navale et de Menuiserie
Route de Madagascar
Sfax

SHIPYARDS--Continued:

Fonderies Reunies
Route de Sousse, Km. 5.5
Megrine

Office National des Peches Ateliers Mecaniques
Route de Madagascar
Sfax

Office National des Peches Chantier Naval de Bizerte
1, Route de La Goulette
Tunis

Office National des Peches Chantier Naval de Sfax
1, Route de La Goulette
Tunis

Office National des Peches Chantier Naval de Sousse
1, Route de La Goulette
Tunis

Societe de Construction Navale (SOCONAV)
106, Avenue de la Liberte
Tunis

Societe Tunisienne de Constructions et de Reparations Mecanique et Navales
Menzel Bourguiba

U.S. EMBASSY:

Embassy of the United States of America
144, Avenue de la Liberte
Tunis

(Tel: 282-566)

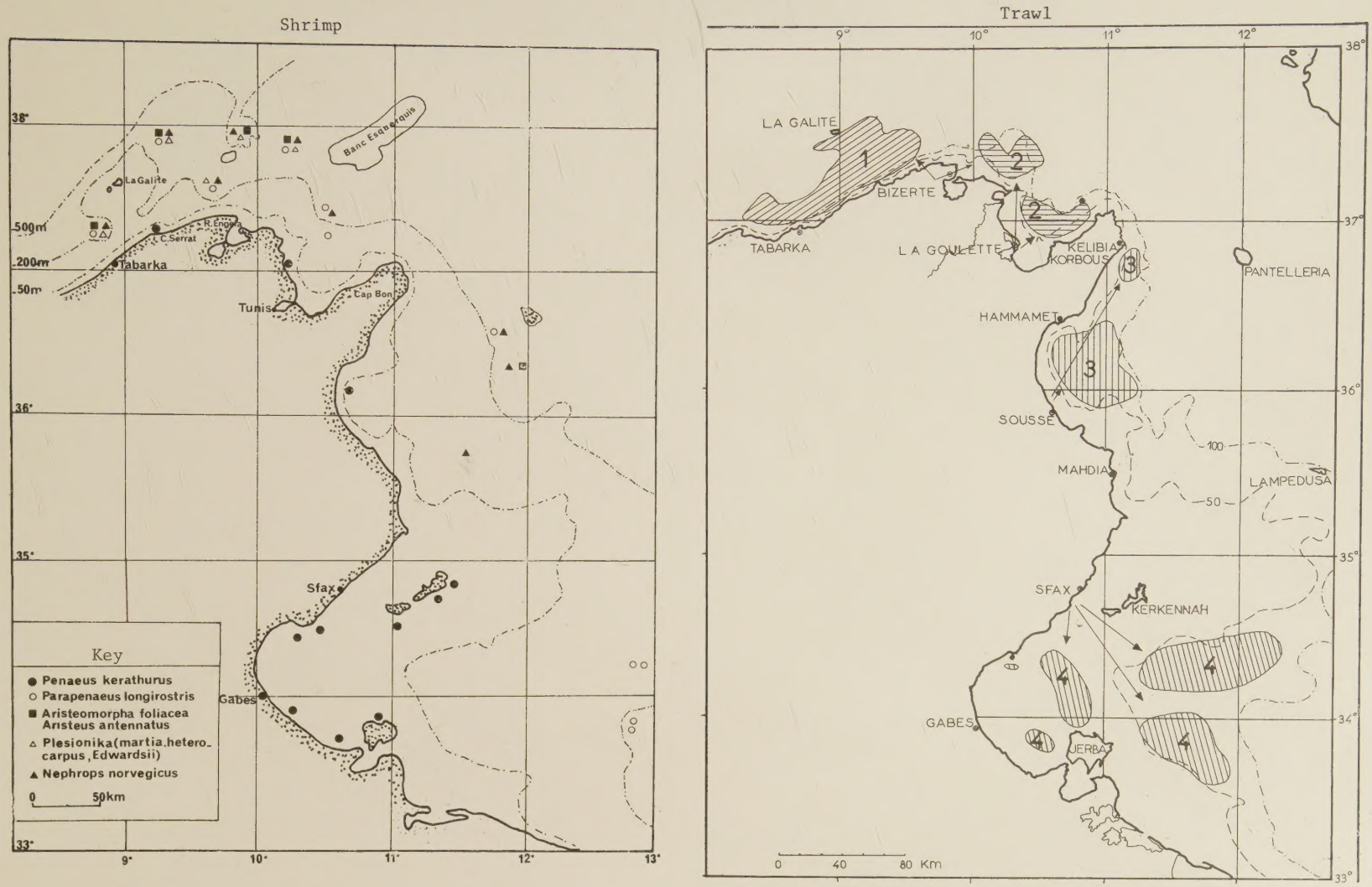
U.S. BANKS:

Citicorp Overseas Services Inc.
2nd Floor
49, Avenue Habib Bourguiba
Tunis

Bankers Trust Company
4, rue As-Sahab Ibn Abbad
Tunis

1/ Symbols used to identify fish species packed by Tunisian canneries:

S = Sardines
A = Anchovy
T = Tuna
F = Fish, various



Appendix C.--Map of Tunisia's crustacean and trawl fishing grounds.

NOAA--S/T 78-67